PPL companies

Transmission Strategy and Planning

Facility Interconnection Studies (FAC-002-2)

Effective: December 20, 2016

FAC-002-2, Requirements R1, Facility Interconnection Studies
Program Title
December 20, 2016
Version Effective Date

Required Approval Signature

Delyn Kilpack, Manager – Transmission Strategy and Planning
Prepared by Delyn Kilpack 12/13/2016 Signature and Date
Chris Balmer, Director – Transmission Strategy and Planning
Approved by Chr Balm 12/13/16 Signature and Date
John Voyles, VP – Transmission / Generation Services
Approved by John N. Voyles Jr. 12/13/16 Signature and Date

Revision History

Version No.	1.0 Effective – January 1, 2016
Summary of Changes: Document Creation after FERC Approval of revised standard	
Version No.	1.1 Effective – December 20, 2016
Summary of Changes: Changes to the FAC-001 document required changes to the FAC-002 document. Appropriate references to the FAC-001 document instead of OATT or OASIS were made in sections: 3.1.1, 3.1.2, 3.4.1. Minor clarifications to sections 3.1.1, 3.1.2, (new section) 3.3.2.	

PPL companies

TABLE OF CONTENTS

1 Introduction

FAC-002-2: The purpose of NERC Reliability Standard FAC-002-2 is "To Study the impact of interconnecting new or materially modified Facilities on the Bulk Electric System (BES).

2 Scope

LG&E and KU is registered as Planner (TP), Transmission Owner (TO), Planning Coordinator (PC), Generator Owner (GO), Load Serving Entity (LSE) and Distribution Provider (DP) which are the functional entities that have some responsibility for compliance of FAC-002-2. The Transmission Strategy and Planning organization at LG&E and KU perform the functions of TP, TO and PC.

This document is intended to document the procedures and responsibilities of the TO, TP and PC as well as responsibilities of the Independent Transmission Organization (ITO) for compliance with FAC-002-2.

This document is applicable to interconnecting new or materially modified Facilities connected to or seeking to connect to the LG&E and KU Planning Coordinator Area on the BES.

3 Responsibilities and Procedures

FAC-002-2 R1, R3, and R4 are applicable to the Transmission Planner (TP), Planning Coordinator (PC), Transmission Owner (TO) and Distribution Provider (DP). This document is the procedure document for the TP, PC, and TO. The DP and GO will have their own procedure documents for FAC-002-2.

3.1 FAC-002-2 Requirement R1

FAC-002-2 Requirement R1 is applicable to the TP and PC.

R1. Each Transmission Planner and each Planning Coordinator shall study the reliability impact of: (i) interconnecting new generation, transmission, or electricity end-user Facilities and (ii) materially modifying existing interconnections of generation, transmission, or electrically end-user Facilities. The following shall be studied:

- R1.1 The reliability impact of the new interconnection, or materially modified existing interconnection, on affected system (s);
- R1.2 Adherence to applicable NERC Reliability Standards; regional and Transmission Owner planning criteria; and Facility interconnection requirements;
- R1.3 Steady-state, short-circuit, and dynamics studies, as necessary, to evaluate system performance under both normal and contingency conditions; and
- R1.4 Study assumptions, system performance, alternatives considered, and coordinated recommendations. While these studies may be performed independently, the results shall be evaluated and coordinated by the entities involved.

3.1.1 Generation Interconnection and End-Use Facilities Interconnection

Transmission customers desiring to add or materially modify their end-use Facilities, generation, and/or loads, must initially follow the procedures documented in the LG&E and KU FAC-001 procedure document and the OATT both are posted on LG&E and KU OASIS. FAC-001 and OATT documents how to submit the data required to properly study the generator and end-user interconnection as well as the application procedures required.

The definition of a materially modified generator or materially modified end-user facility is documented in the OATT Business Practices document posted on OASIS.

The studies follow requirements contained in the NERC TPL-001-4, FAC-001 as well as FAC-002 Reliability Standard and LG&E and KU Transmission Planning Guidelines (posted on OASIS). These procedures document the types of studies that are performed including steady state, short-circuit, and dynamic stability studies. The procedures document how the new and/or materially modified facilities must undergo an approval process and Ad Hoc Group review prior to the addition or modification.

After the completion of the required studies the results of the studies will be communicated to the associated GO, LSE or DP who requested the new or materially modified interconnection. This communication will include study assumptions, system performance, list of constraints as a result of the addition or modification, alternatives considered along with recommendations required to meet system performance requirements per NERC TPL-001-4 Reliability Standard and the LG&E and KU Transmission Planning Guidelines. The addition and/or material modifications cannot be constructed without the completion of all studies, mitigation of performance requirements and approval by either the PC or ITO where appropriate.

The ITO is responsible for completing Generator Interconnection system impact studies (GI SIS) for new or materially modified generation facilities. The GO must submit a GI request to the ITO per the process described in the LG&E and KU OATT. The ITO is also responsible for studying and approving new or materially modified end-user Facilities. New or materially modified end-user Facilities require a Transmission Service Request system impact study (TSR SIS) submitted to the ITO. When required, the ITO directs the TO to complete the Facilities studies (FS). The ITO is responsible for posting the completed studies to OASIS. The ITO is responsible for coordinating Ad Hoc Group meetings as necessary related to GI SIS and TSR SIS. Importantly, for Ad Hoc meetings related to GI SIS, there must be at least one participant from the TP, PC, and TO. For meetings related to TSR SIS, there must be at least one participant from the TP, PC, and TO. The LG&E and KU TP will maintain brief notes on the Ad Hoc Group meetings that lists attendees and entities they represent.

3.1.2 Transmission to Transmission Interconnection

An addition or modification of a transmission to transmission (T to T) interconnection that does not include a load addition or modification does not go through the ITO study process described in section 3.1.1. LG&E and KU defines a Transmission interconnection within the LG&E and KU Planning Coordinator Area and another Planning Coordinator Area as a tie line between two separate entities that own facilities with an operating voltage of 69 kV or higher. The requirements of FAC-002-2 R1 of an addition or materially modified T to T interconnection will be a combined study with participation by each of the Planning Coordinators and/or TOs involved in the T to T. The LG&E and KU FAC-001 procedure document posted on OASIS documents what LG&E and KU defines as a materially modified Transmission Interconnection or T to T.

The T to T study will include Ad Hoc Group coordination using the same Ad Hoc Group participants in a GI or TSR study. The Ad Hoc Group participation will include, but not be limited to, two conference calls. The first conference call will discuss the study scope prior to initiating the study. The final Ad Hoc Group conference call will present the results of the study. Ad Hoc Group participants can make comments and are encouraged to comment on the study as it proceeds through the process. Brief meeting notes will be kept on the T to T Ad Hoc Group conference calls which include a list of attendees and the entities that they represent.

The TO is responsible for coordinating the combined study as described above, in addition to maintaining the completed study results and reports. The TO is responsible for initiating the Ad Hoc Group meetings, in addition to documenting meeting notes. Importantly, for these Ad Hoc Group meetings, there must be at least one PC representative from LG&E/KU and a PC or TP representative from the connecting entity.

3.2 FAC-002-2 Requirement R2

FAC-002-2 Requirement R2 is applicable to the GO.

> **R2.** Each Generator Owner seeking to interconnect new generation Facilities, or to materially modify existing interconnections of generation Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4.

This document is only intended to document the responsibilities of the TO, PC, TP and ITO. There is no responsibilities of TO, PC, TP or ITO in requirement R2.

The GO is responsible for maintaining all evidence related to compliance for requirement R2.

3.3 FAC-002-2 Requirement R3

FAC-002-2 Requirement R3 is applicable to the TO and DP.

> **R3.** Each Transmission Owner, each Distribution Provider, and each Load-Serving Entity seeking to interconnect new transmission Facilities or electricity end-user Facilities, or to materially modify existing interconnections of transmission Facilities or electricity end-user Facilities, shall coordinate and cooperate on studies with its Transmission Planner or Planning Coordinator, including but not limited to the provision of data as described in R1, Parts 1.1-1.4

3.3.1 New or Modified Facilities of Transmission Owner (TO)

New or materially modified Facilities from a TO seeking to interconnect new transmission or modified Facilities must perform coordinated studies with the LG&E and KU TP, TO and/or PC. These studies must include but not be limited to steady state, short circuit and dynamics stability studies. Reports of the coordinated studies must be generated and sent to the parties with a request for comments and changes.

For a T to T interconnection between the LG&E and KU PC Area and another PC area, Ad Hoc Group participation will be included (see Section 3.1.2). The TO is responsible for initiating the Ad Hoc Group meetings, in addition to documenting meeting minutes. For Ad Hoc Group meetings, there must be at least one TP representative from LG&E and KU and one TP representative from a neighboring entity.

All new and/or materially modified transmission Facilities must be agreed upon by the TP, TO, and/or PC with a designation of ownership and responsibility of ownership assigned prior to construction of Facilities. Ownership and responsibilities will be documented via associated interconnection agreements by all parties.

3.3.2 New or Modified Facilities of DP or LSE

The DP or LSE seeking to interconnect to the must following the requirements of the LG&E and KU FAC-001 and OATT procedures posted on OASIS.

3.4 FAC-002-2 Requirement R4

FAC-002-2 Requirement R4 is applicable to the TO.

R4. Each Transmission Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested new or materially modified interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4

3.4.1 New or Modified Transmission Facilities

LG&E and KU is registered as a TP, TO and PC. The organization responsible for studying new and materially modified interconnections to its Facilities also perform the functions for TP and PC functions at LG&E and KU. Therefore, coordination of new or modified transmission Facilities between TP, TO, and PC is performed since these are performed by the same organization at LG&E and KU.

The LG&E and KU FAC-001 document posted on OASIS has identified what defines a "materially modified" T to T interconnection.

3.5 FAC-002-2 Requirement R5

FAC-002-2 Requirement R5 is applicable to the GO.

R5. Each applicable Generator Owner shall coordinate and cooperate with its Transmission Planner or Planning Coordinator on studies regarding requested interconnections to its Facilities, including but not limited to the provision of data as described in R1, Parts 1.1-1.4.

This document is only intended to document the responsibilities of the TO, PC, TP and ITO. There is no responsibilities of TO, PC TP or ITO in requirement R5.
.

The GO is responsible for maintaining all evidence related to compliance for requirement R5.